



John F. Kennedy Space Center

Anti-Corrosive Powder Particles



The National Aeronautics and Space Administration (NASA) seeks partners for a new approach in protecting embedded steel surfaces from corrosion. Corrosion of reinforced steel in concrete structures is a significant problem for NASA at the John F. Kennedy Space Center (KSC) because of the close proximity of the structures to salt spray from the nearby Atlantic Ocean. To minimize damage to such structures, coatings were developed that could be applied as liquids to the external surfaces of a substrate in which the metal structures were embedded.

The Metallic Pigment Powder Particle technology was developed by NASA at KSC. This technology combines the metallic materials into a uniform particle. The resultant powder can be sprayed simultaneously with a liquid binder onto the surface of concrete structures with a uniform distribution of the metallic pigment for optimum cathodic protection of the underlying steel in the concrete. Metallic Pigment Powder Particle technology improves upon the performance of an earlier NASA technology, Liquid Galvanic Coating (U.S. Patent No. 6,627,065).

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BENEFITS

- Powder applied to the outer surface of reinforced concrete, not to the rebar
- Corrosion prevention is achieved after construction is complete
- Quick and repeatable application by brush or spray
- Reduces maintenance costs over the lifetime of the structure

technology ■ opportunity

APPLICATIONS

- Highway and bridge infrastructures
- Parking decks, ramps, and garages
- Cooling towers
- Pipelines
- Engineered structures (commercial and civil)
- Concrete piers, offshore platforms, piles, pillars, pipes, and utility poles above water line
- Buildings and foundations

TECHNOLOGY STATUS

- ☒ Patent pending
- ☐ U.S. patent
- ☐ Copyrighted
- ☐ Available to license
- ☐ Available for no-cost transfer
- ☒ Seeking industry partner for further codevelopment

Technology Details

The new technology improves the previous technology by combining the metallic materials into uniform particles. The resultant powder can be sprayed together with a liquid binder onto the surface of concrete structures, thus uniformly distributing the metallic pigment for optimum cathodic protection of the underlying steel in the concrete. After the coating is applied to the outer surface of reinforced concrete, an electrical current is established between the metallic particles and the surfaces of the embedded steel rebar. The intrinsic electrochemical properties of the material, which make this metallic pigment perform in a corrosive environment, can be maximized if the materials are uniformly distributed across the concrete surface.

Partnership Opportunities

NASA has applied for a U.S. patent on the new Anti-Corrosive Powder Particles and is seeking licensees of the patent. NASA has the authority to grant licenses on its domestic and foreign patents and patent applications pursuant to 35 U.S.C. 207-209. NASA has implemented this authority by means of the NASA Patent Licensing Regulations, 37 CFR § 404. All NASA licenses are individually negotiated with the prospective licensee, and each license contains terms concerning commercialization (practical application), license duration, royalties, and periodic reporting. NASA patent licenses may be exclusive, partially exclusive, or nonexclusive. If your company is interested in the new Anti-Corrosive Powder Particles technology, or if you desire additional information, please reference Case Number KSC-12631 and contact:

Jeff Kohler
Technology Programs and Partnerships Branch
Mail Code: KT-A2
Kennedy Space Center, FL 32899
Telephone: (321) 861-7158
Fax: (321) 867-2050
jeffrey.a.kohler@nasa.gov